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A BI-MONTHLY NEWSLETTER

Indian Aviation Industry: Heading Toward Duopoly

Dear Friends,

Go Airlines jolted India's aviation market during its peak season by announcing that it has used the bankruptcy code to approach the National Company Law Tribunal. The airline has resorted to a voluntary insolvency, which means that it can still operate once the process is over. However, for the time being India's aviation market is going to have a vacuum – Go Air's market share in February was 8%. Inevitably, already high air fares will rise further. Currently, India is the third largest domestic civil aviation market in the world and fifth largest market in terms of air passengers both domestic and internationally. What it needs is more competition. However, Tatas after re-entering the aviation sector with its $2.4 billion acquisition of government-owned Air India have earned the rare distinction of being a part of four airline ventures – Vistara, AirAsia India, Air India and Air India Express. Now, it's bringing its interests together – by merging low-cost carriers AirAsia with Air India's low-cost subsidiary Air India Express. It's also moving towards merging its other two full-service airlines – Vistara with Air India. Between Tata-owned airlines and the largest carrier, IndiGo – the Indian airline industry is set for a duopoly with the exit of Go Airlines which though small had a presence in some specific routes.

In a Duopoly Two giants control the narrative and essentially play ping pong. It isn't always a Company A vs Company B scenario either; the two could create the illusion of competition, but exchange a quid pro quo in certain segments, so that they can collude on the pricing and the rise of other players. The government needs to regulate this by keeping a close watch as also facilitate more airlines to enter India to generate competition. But Thanks to choking regulations, tough entry barriers, high fuel prices abetted by high taxes, inefficient public sector airports paving way for monopoly airports that are extortionist and lack of a long-term strategic policy, growth of aviation has again slumped in spite of increasing passengers. Government intentions are however positive and that provides a degree of assurance that future of Aviation Sector remains bright.

Happy travels!

Sanjiv Aggarwal

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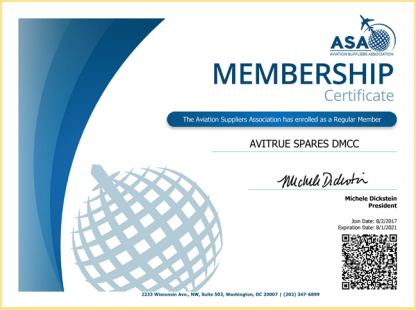
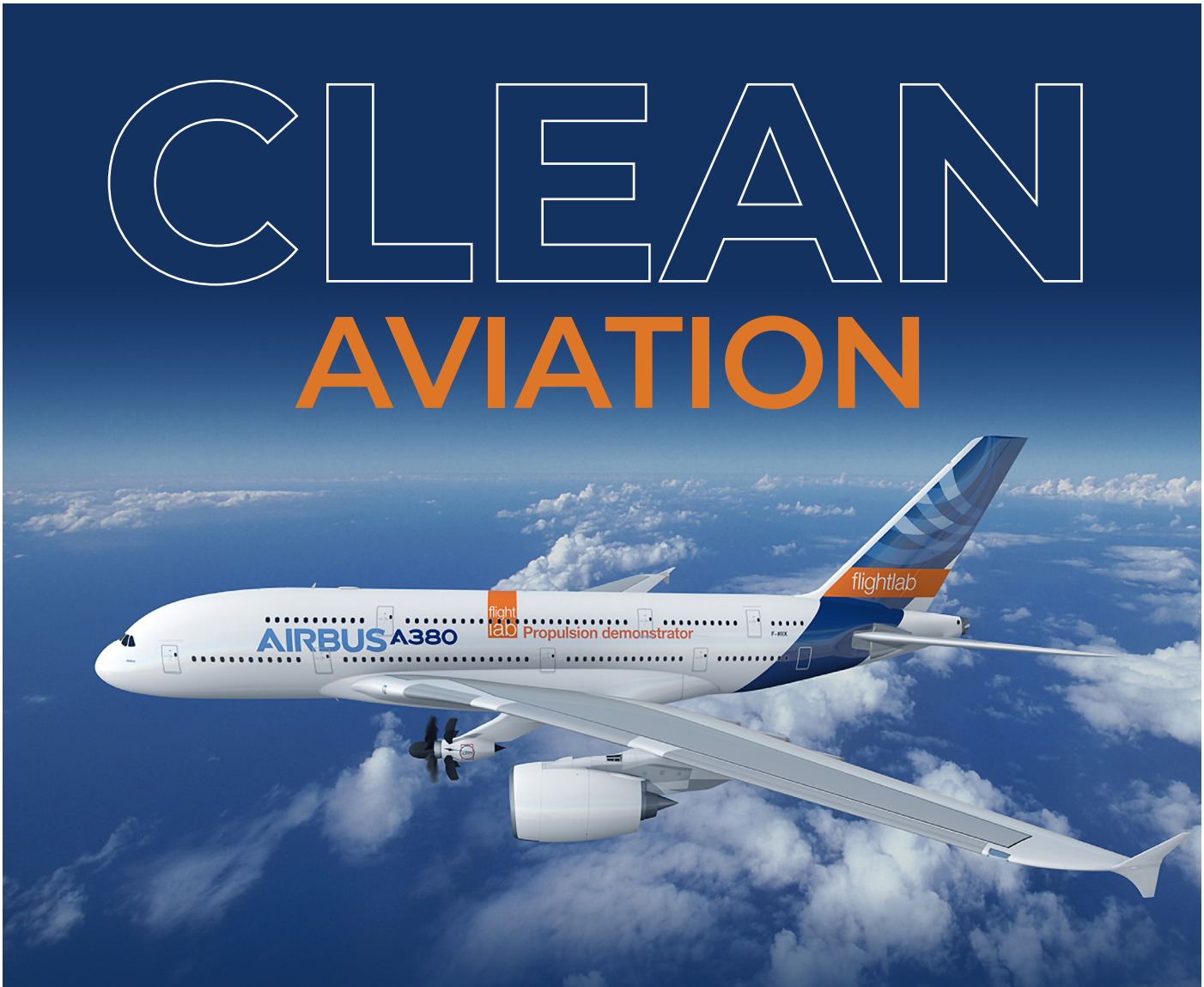


CLEAN AVIATION



(Safran To Lead Open Fan Studies for EU's OFELIA Project)

Aviation is the backbone of our modern society. However, at the same time, aviation is also responsible for around 5% of anthropogenic causes of global warming. The impact of the COVID-19 pandemic on the aviation sector in the short term is clearly very high, but the long-term effects are still unknown. However, with the increase in global GDP, the number of travellers is expected to increase between three- to four-fold by the middle of this century. While other sectors of transportation are making steady progress in decarbonizing, aviation is falling behind. International Business Aviation Council IBAC) state that from 2020 onwards, the net carbon emissions from aviation will be capped through carbon-neutral growth. The goal set by Air Transport Action Group (ATAG) is to reduce the net aviation carbon emissions in 2050 to half of what they were in 2005. To achieve the latter goal, the reduction of CO2 emission per passenger-kilometre should decrease by more than 90%. In 2016 the International Civil Aviation Organization (ICAO) assembly decided that a global market-based measure should be put in place to offset CO2 emissions from international aviation. The scheme has been named CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation) and aims at limiting the CO2

emissions from aviation to the levels of 2019 with the help of offsetting schemes.

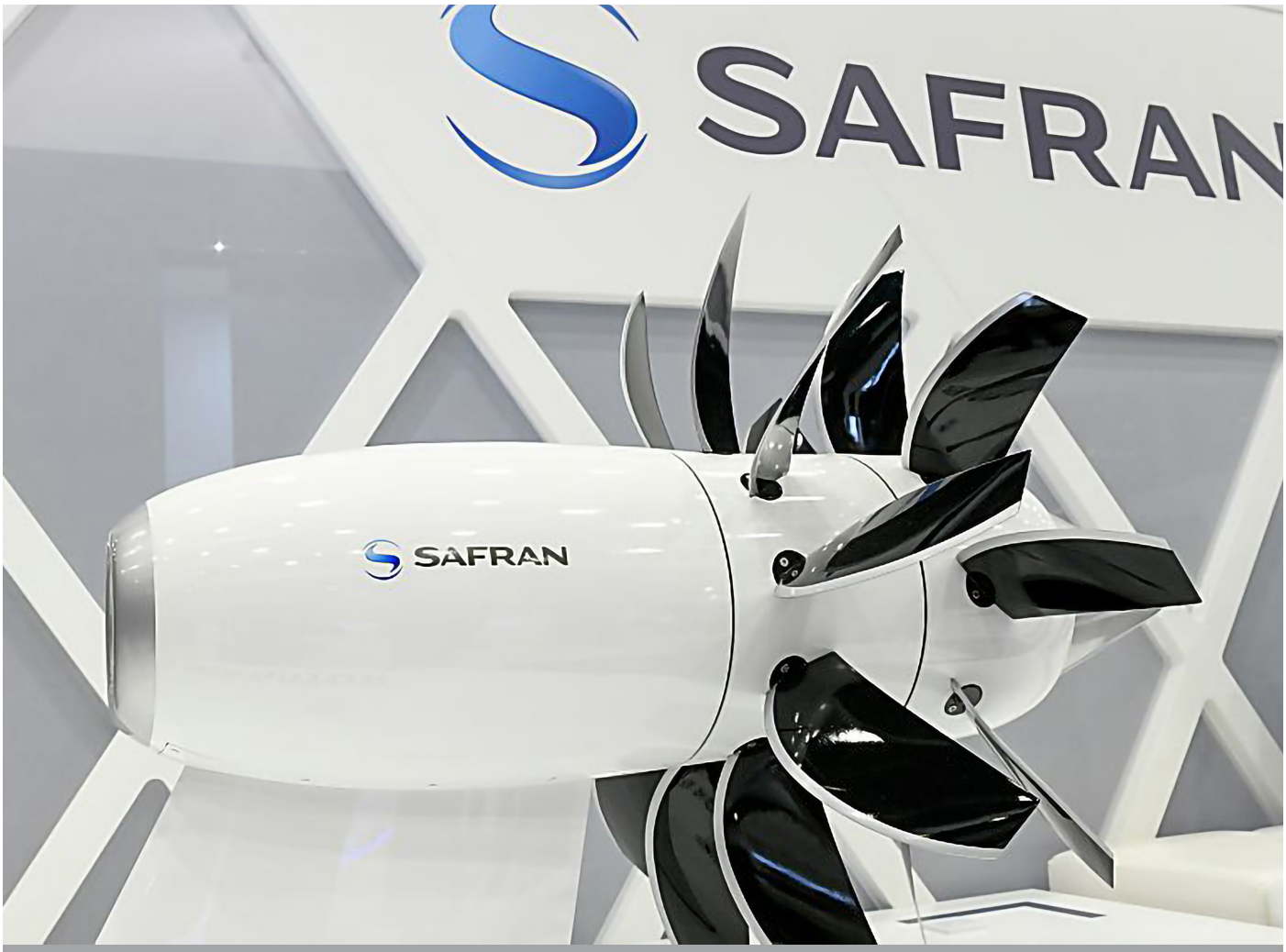
The engine is key in this effort and the Open Fan engine architecture is the most promising solution in terms of fuel efficiency to both achieve environmental goals (20% emissions reduction versus 2020) and target a rapid Entry into Service, as early as 2035.

In synergy with national programs, Open Fan for Environmental Low Impact of Aviation (OFELIA) gather a large European consortium to contribute to the RISE technology demonstration announced in June 2021. OFELIA will allow installation of an increased fan diameter on a conventional aircraft configuration, thanks to innovative turbomachinery technical solutions.

Following the architecture definition, OFELIA will perform a large-scale Open Fan engine ground test campaign, deliver flightworthy propulsive system definition and prepare an in-flight demonstration for the phase 2 of Clean Aviation.

The project will also optimize the engine installation with the airframer and address certification, in close collaboration with airworthiness authorities, taking advantage of the permit-to-fly activity.

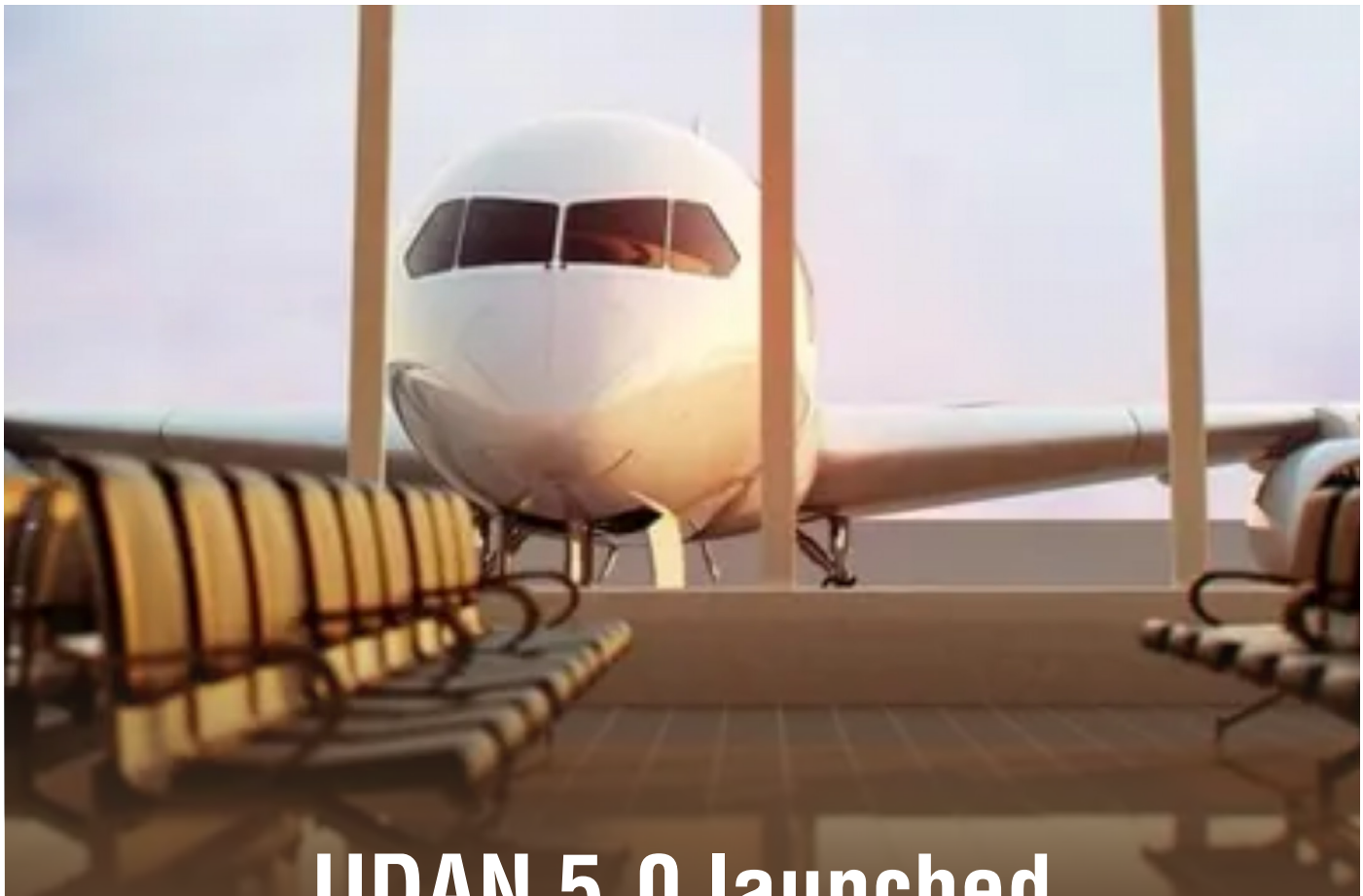
Safran Aircraft Engines will coordinate the demonstration of new open fan engine technologies within the framework of the EU-led Clean Aviation Joint Undertaking project Open Fan for Environmental Low Impact of Aviation (OFELIA). Safran will work with 26 industry European key partners, including Airbus, Avio Aero, and GKN Aerospace, as well as research labs such as the French national aerospace research center ONERA and academics from several countries across Europe. The OFELIA consortium expects to receive €100 million in European funding from Clean Aviation.



OFELIA's plans to demonstrate the efficiency benefits of an open fan architecture to address the needs of future short- and medium-range aircraft by about 2035. The program partners aim for a 20 percent reduction of fuel consumption and CO2 emissions compared with conventional narrowbodies. Under Clean Aviation's OFELIA initiative, Safran Aircraft Engines and its partners expect to develop a set of technologies to TRL 5 for low-pressure systems, high-pressure core, and advanced systems including hybridization for ground and flight test demonstrations with an Airbus A380 powered by an open fan by the middle of this decade. The consortium also aims to ensure full compatibility of the architecture with sustainable aviation fuels (SAF) and hydrogen.

The OFELIA roadmap will encompass more than 20 tests at the partners' facilities. Safran Aircraft Engines, Avio Aero, and GKN Aerospace will work together to design and manufacture components for the open fan engine demonstrator. Specific topics of the technology maturation plan for the open fan include whirl flutter, unducted fan, propeller and vanes, high-speed booster, high-speed low-pressure turbine aerodynamics, high-power compact reduction gearbox, lightweight engine components, combustor emissions, high-pressure compressor aerodynamics, and engine hybridization.

The development of hydrogen combustion and open fan technologies are part of CFM International's** RISE (Revolutionary Innovation for Sustainable Engines) program, which was unveiled in 2021 to advance new engine architectures, hybrid electric and advanced compact core technologies to achieve at least 20% better fuel efficiency and 20% fewer CO2 emissions by the mid-2030s compared to the most efficient engines in service today.



UDAN 5.0 launched by Civil Aviation Ministry

Following the four successful rounds of bidding, the Ministry of Civil Aviation has launched the 5th round of the Regional Connectivity Scheme (RCS) to further enhance the connectivity to remote and regional areas of the country and achieve last mile connectivity.

Key Features of UDAN 5.0 are as follows:

- This round of UDAN focuses on Category-2 (20-80 seats) and Category-3 (>80 seats).
- The earlier stage length cap of 600 km is waived off and there is no restriction on the distance between the origin and destination of the flight.
- Viability gap funding (VGF) to be provided will be capped at 600 km stage length for both Priority and Non-Priority areas which was earlier capped at 500 km.
- No predetermined routes would be offered. Only Network and Individual Route Proposal proposed by airlines will be considered.
- The airlines would be required to submit an action/ business plan after 2 months from the issuance of LoA wherein they submit their aircraft acquisition plan/ availability of aircraft, crew, slots, etc. at the time of the Technical Proposal.
- The same route will not be awarded to a single airline more than once, whether in different networks or in the same network.
- Exclusivity will be withdrawn if the average quarterly PLF is higher than 75% for four continuous quarters, to prevent exploitation of the monopoly on a route.
- 25% of the Performance Guarantee to be encashed for each month of delay up to 4 months, to further incentivize quick operationalization.

UDAN Regional Connectivity Scheme

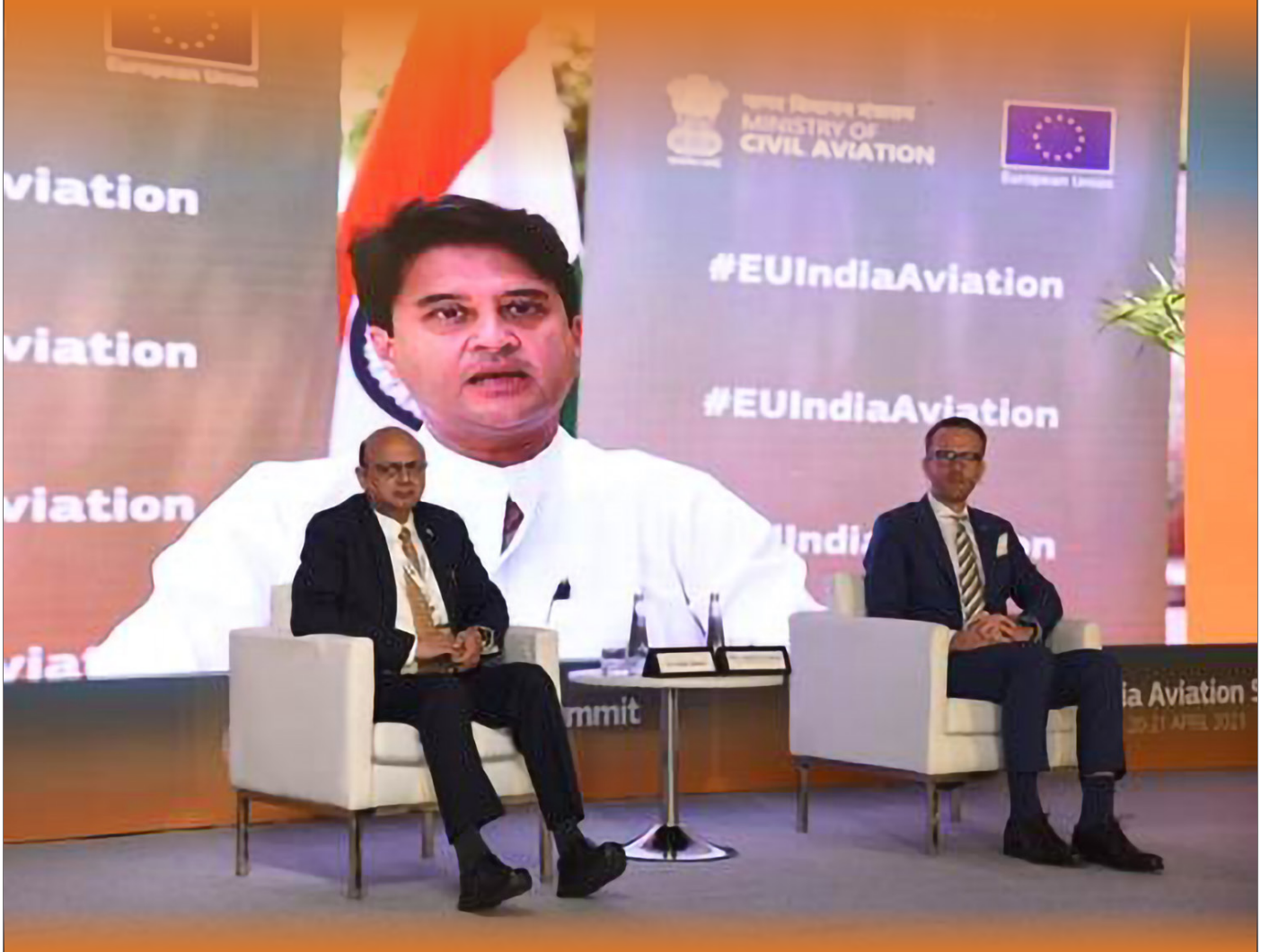
- Airlines would be required to commence operations within 4 months of the award of the route. Earlier this deadline was 6 months.
- A list of airports that are ready for operation or would soon be ready for operations has been included in the scheme to facilitate quicker operationalization of routes under the Scheme.
- Novation process for routes from one operator to another is simplified and incentivized.

Commenting on the launch of UDAN 5.0, the Minister of Civil Aviation & Steel, Shri Jyotiraditya Scindia said, "UDAN has proved to be a lifeblood of many regions which are now well connected with places across the country. This new & stronger version of the scheme will raise the momentum, connecting new routes, and bring us closer to the target of operationalizing 1000 routes & 50 additional airports, heliports, and water aerodromes in the near future.

UDAN Scheme has benefitted a diverse set of stakeholders. Passengers have got the benefits of air connectivity, airlines have received concessions for operating regional routes, unserved regions have received the direct and indirect benefits of air connectivity for their economic development. It is another step towards the prime minister's vision of the common man traveling by air at affordable and subsidized airfares.

AVITRUE HAS TIE UP WITH FAA AND EASA APPROVED SHOPS IN US AND EUROPE FOR COMPONENT REPAIR

India and EU share strong historical relations: Shri Scindia



The two days EU-India Aviation Summit began in New Delhi in April end. During the summit, a declaration of intent was signed by Airport Authority of India with Eurocontrol, and a letter of intent memorandum of understanding was signed by DGCA with the European Union Aviation Safety for closer cooperation.

The summit focuses on EU-India air transport relations and the mutually shared challenges and opportunities of the two regions, such as the post-COVID recovery of air traffic, increasing sustainability, maintaining safety and the development of unmanned aircraft systems.

The Union Minister of Civil Aviation and Steel, Shri Jyotiraditya M. Scindia addressed the summit virtually. He said, "India and the European Union (EU) have shared strong historical relations which continue to grow today on the back of robust physical, digital and people-to-people connectivity, aided by the aviation industry"

Shri Scindia stated, "Under the visionary leadership of the Prime Minister Shri Narendra Modi, the Government has taken several steps to promote aircraft manufacturing in the country. We have reformed the regulatory environment to make it as conducive as possible for MROs – reduced GST rates on MRO services from 18% to 5% and allowed 100% Foreign Direct Investment into the sector. New MRO guidelines have also been rolled out for rationalisation of the charges leviable on MRO Service

Providers for ease of doing business. I would urge industry players from EU to tap these opportunities, and become a part of the fastest growing aviation market in the world."

The minister invited EU players to partner India in developing adaptive technologies, and support the objective of tackling emissions from the aviation Industry. "We are encouraging airports to use 100% green energy by 2024, and achieve net zero by 2030. 25 AAI airports are already using 100% green energy. Our target is to make another 121 Airports carbon neutral by 2025. We have also mandated the use of renewable energy as part of the bid documents for upcoming airports; we are also working towards encouraging the use of Sustainable Aviation Fuel. Indian Airline operators have already conducted demonstration flights using bio-fuel blended with ATF", he concluded.

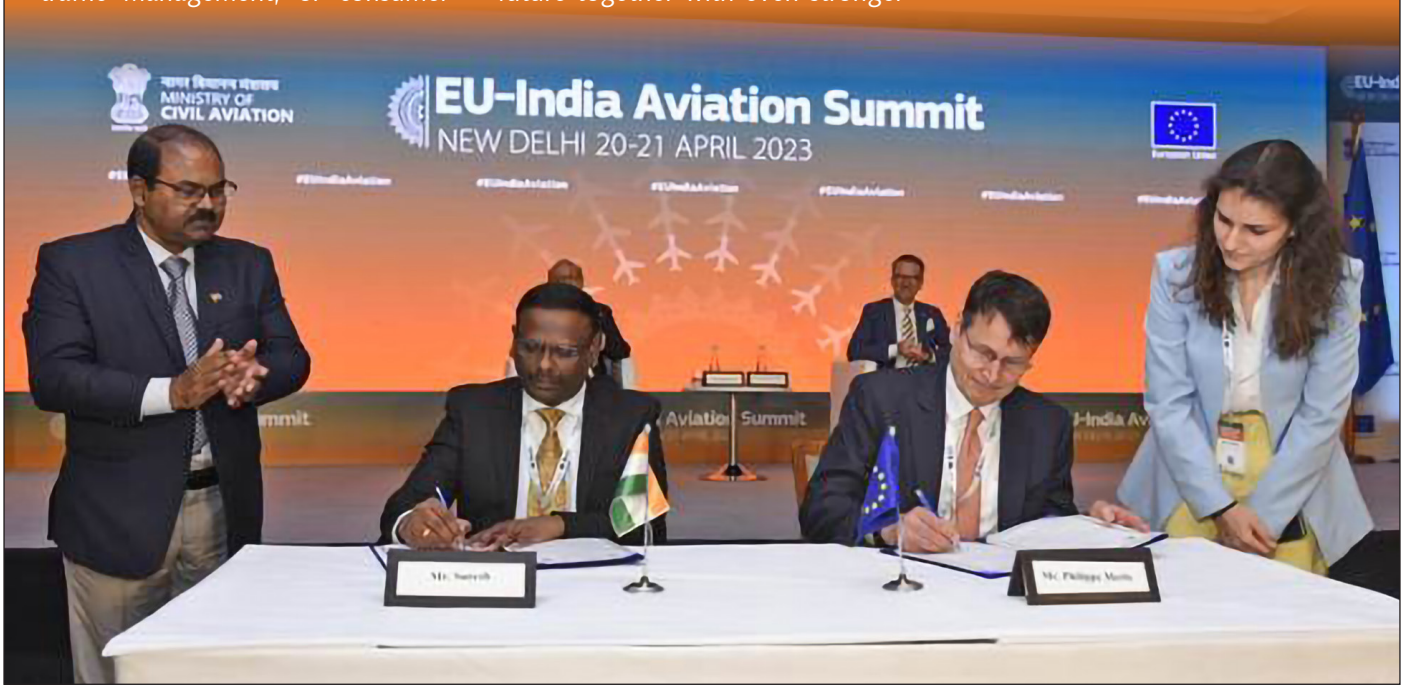
Ms Adina Valean, European Union Commissioner for transport, also addressed the summit through virtual mode. She said, "From commercial opportunities, to aviation safety and security, sustainability, air traffic management, or consumer protection, our shared experiences, as well as our shared objectives, make us natural partners."

She further said, "We already have a successful history of partnership and cooperation in many areas. I truly hope aviation will become one of our most successful partnerships."

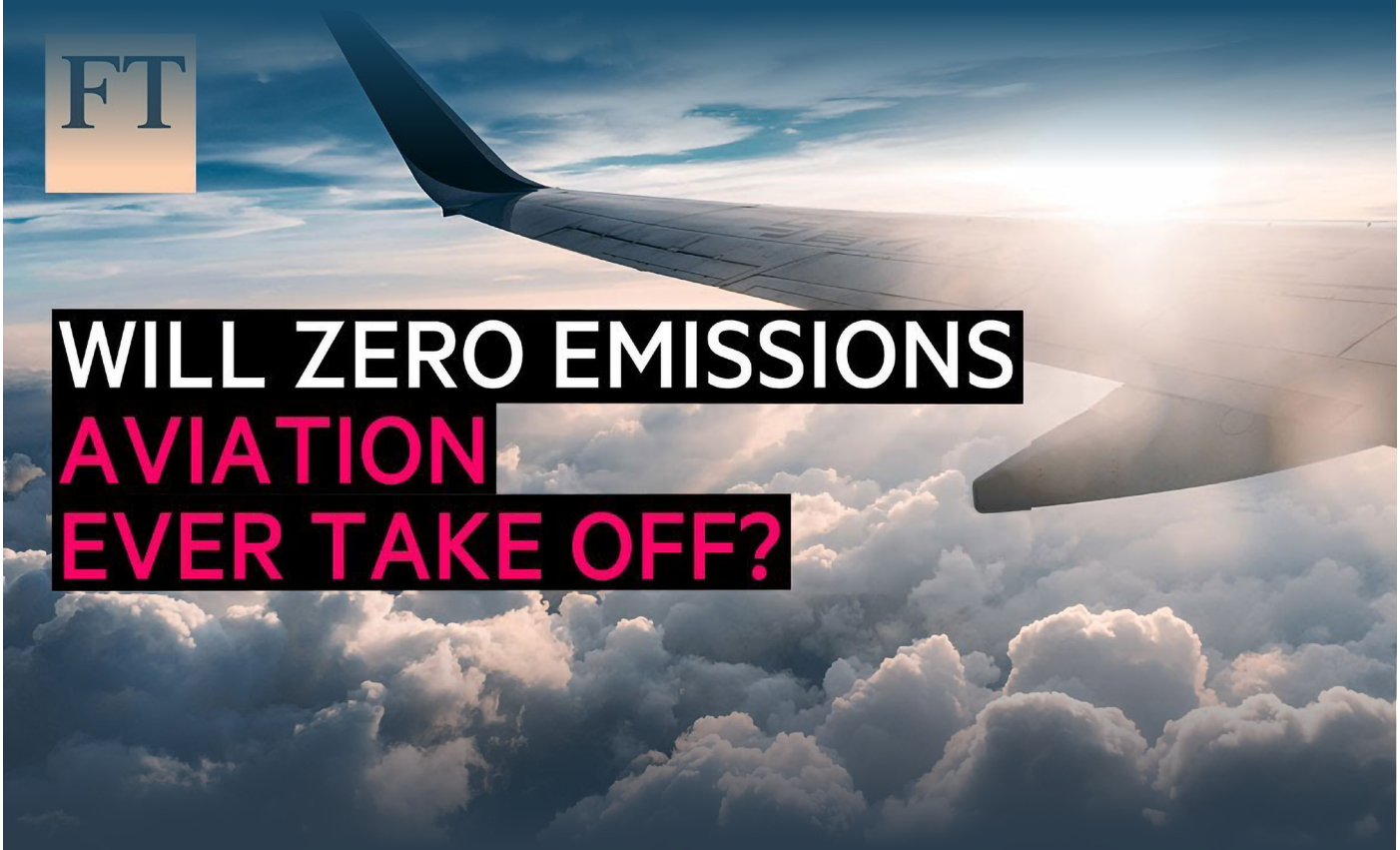
Mr Andreas Carlson, minister of Infrastructure and Housing, Sweden addressed the summit. He said, "We have a long standing history of bilateral relation between India and EU. I am sure we have a bright future together with even stronger cooperation and collaboration between EU and India."

The Secretary, ministry of Civil Aviation, Shri Rajiv Bansal addressing the summit said, "There are several fronts on which India and EU cooperate and this summit marks beginning of that journey."

He said that Indian aviation sector is growing rapidly, and we are preparing for having better infrastructure, better connectivity, with renewed focus on innovation.



Meeting of the Consultative Committee of Ministry of Civil Aviation to reduce Carbon emissions held.



A meeting of the Consultative Committee of Ministry of Civil Aviation held in New Delhi today. The subject for discussion was Sustainable Aviation Fuel (SAF).The meeting was chaired by Minister of Civil Aviation Shri Jyotiraditya M. Scindia and attended by several Hon'ble Members of Parliament.

International Civil Aviation Organization (ICAO) has been entrusted to facilitate to reduce the carbon emissions from international civil aviation as one of its focus areas. In order to mitigate carbon emissions from aviation sector and its impacts on climate change. ICAO has adopted the aspirational goals, viz. 2% annual fuel efficiency improvement through 2050, Carbon Neutral Growth from 2020 onwards, and net zero by 2050. A basket of measures has also been identified by ICAO to achieve these goals which include the Carbon Offfsetting and Reduction Scheme for International Aviation (CORSIA) and the Long Term Aspirational Goals (LTAG).

CORSIA is implemented in three phases, out of which participation is voluntary in the first two phases for (2021-2026). India has decided not to participate in the voluntary phases of CORSIA. Offsetting requirement under the CORSIA for Indian careers will start from 2027. This will enable airlines of the developing countries like India to get time to grow more and do not face any financial consequences due to CORSIA by joining voluntary phases. CORSIA is applicable to international flights originating from one country to another. Financial implications due to offsetting will be born by individual airlines depending upon their international operations as and when applicable.

India has committed to net zero by 2070 at COP26 to the United Nations Framework Convention on Climate Change (UNFCCC). The Ministry of Petroleum & Natural Gas (MoPNG) has notified a National Policy on Bio Fuels 2018 to realize the goal of de-carbonization of aviation sector. MoPNG constituted

the Bio-Aviation Turbine Fuel Programme Committee to take forward the Bio-ATF Programme in the country to promote the use of clean fuel in aviation. The Committee has submitted its report which has now been circulated to various stakeholders.

India has also taken several steps like joining ICAO's Assistance Capacity Building & Training for Sustainable Aviation Fuels Programme. The Bureau of Indian Standard has issued Indian Standard for Bio-Jet ATF in January 2019. Several meetings have been held with the Indian Carriers to sensitize them regarding the impact of CORSIA on airlines once the mandatory phase starts and the resultant needs to be prepared for the same.

DGCA has also granted approval to following:

I. M/s Spicejet operated a demonstration flight with 25% SAF (Biofuel produced from Jatropha seeds by Indian Institute of Petroleum, CSIR lab) blended with ATF from Dehradun to Delhi in August, 2018. The fuel is under process of ASTM approval.

II. M/s Indigo carried out its first international ferry flight with 10% blended fuel from Toulouse to Delhi on 17.02.2022.

III. M/s Vistara carried out 30% blended SAF ferry flight from Seattle to Delhi in March 2023

IV. M/s Air Asia to carry out first commercial domestic flight with 0.57% SAF belnded fuel flight is yet to commence.

Indian Oil Corporation Ltd. (IOICL) has planned an 86.8 TMTPA plant at Panipat using LanzaJet ATJ (alcohol to jet) Technology. IOCL has also signed a MoU with Pune-based Praj Industries to set up a plant for developing ATJ fuels.

Mangalore Refinery and Petrochemicals Ltd. Is planning to build a bio-ATF pilot plant at Mangalore using CSIR-Indian Institute of Petroleum's technology using non edible oils and used cooking oil as feedstock.